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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,492	03/25/2004	Hans Wettstein	003-124	5733

36844 7590 09/07/2005

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EXAMINER

HANAN, DEVIN J

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Tata

Office Action Summary	Application No.	Applicant(s)	
	10/808,492	WETTSTEIN ET AL.	
	Examiner	Art Unit	
	Devin Hanan	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/14/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "superalloy" is not defined in the specification as having any particular characteristics beyond an alloy. Correction is requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rossman (U.S. Patent 5,474,421) in view of Heppenstall (U.S. Patent 5,741,119) and Evans (U.S. Patent 4,878,810).

Rossman discloses an axial flow turbomachine with circumferentially arranged rotor blades made of an intermetallic compound (col. 1 lines 12-22) and at least two

rotor blades positioned at a uniform distance from one another and are made of a material more ductile than the intermetallic compound (col. 2 lines 4-10).

Rossman does not disclose that the blades are arranged in a circumferential groove on a metallic rotor or that at least two of the non-intermetallic rotor blades have different blade tip shapes or longer lengths.

However, Heppenstall teaches of mounting the blades in circumferential grooves (col. 1 lines 16-27) in metallic rotors (col. 2 lines 18-24) for the purpose of providing a root attachment for a blade and rotor that have different stiffness (col. 1 lines 45-47).

Additionally, Evans teaches of rotor blades of different lengths (col. 2 lines 65-68) for the purpose of helping to control resonant frequencies (col. 1 lines 12-52).

Since Rossman, Heppenstall and Evans are all from the thermal turbomachine art, the purposes disclosed by Heppenstall and Evans would have been recognized in the pertinent art of Rossman. It would have been obvious at the time the invention was made to one having ordinary skill in the art to modify the rotor blades of different materials of Rossman by arranging them in a circumferential groove as taught by Heppenstall, and by profiling the blade tip shapes, as taught by Evans for the purpose of providing root attachment for a bladed and rotor that have different stiffness (col. 1 lines 45-47) and helping to control resonant frequencies (col. 1 lines 12-52).

Claims 2, 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossman in view of Heppenstall and Evans and further in view of Rahnke (U.S. Patent 3,664,766).

Rossman in view of Heppenstall and Evans discloses all of the above elements in claim 1, and teaches of making turbine components of gamma titanium aluminide alloy (Heppenstall col. 2 line 22), but does not disclose intermediate pieces made of a more lightweight material than the material of the rotor arranged between adjacent rotor blades.

However, Rahnke teaches of lightweight material intermediate pieces (20) made of a high temperature ceramic, alumina, (col. 2 lines 39-41) for the purpose of reducing mass (col. 1 lines 65).

Since Rossman, Evans, Heppenstall and Rahnke are all from the in the thermal turbomachine art, the purpose disclosed by Rahnke would have been recognized in the pertinent art of Rossman. It would have been obvious to one having ordinary skill in the art to add the lightweight material intermediate pieces for the purpose of providing lightweight intermediate pieces (col. 1 line 65).

Claim 4 is rejected under 35 USC 103(a) as unpatentable over Rossman in view of Heppenstall and Evans and Rahnke. Rossman in view of Heppenstall and Evans and Rahnke as modified in the rejection of claim 3 above, teach of using gamma titanium aluminide alloy except that there is no chemical composition given as claimed. It is common practice in the art to vary chemical compositions to vary attributes. Additionally, the varying of attributes could result in higher creep strength and better overall performance. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the chemical composition of the

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gamma titanium aluminde alloy of Heppenstall to vary the attributes as an engineering expedient.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossman in view of Heppenstall and Evans and further in view of Benoit et al. (U.S. Patent 5,551,840).

Rossman in view of Heppenstall and Evans discloses all of the above elements in claim 1, but does not disclose blade tips made of a hard phase that consists of a wear resistant layer laser welded to the blade tips.

However, Benoit et al. teaches of hard phase blade tips with a wear resistant layer that is laser welded to the blade tips (col. 4 lines 6-15) for the purpose of lessening wear (col. 2 lines 65-66).

Since Rossman, Evans, Heppenstall and Benoit et al. are all from the thermal turbomachine art, the purpose disclosed by Benoit et al. would have been recognized in the pertinent art of Rossman. It would have been obvious to one having ordinary skill in the art to add the laser welded wear resistant blade tips for the purpose of lessening wear (col. 2 lines 65-66).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossman in view of Heppenstall and Evans and further in view of Siga et al. (U.S. Patent 5,008,072).

Rossman in view of Heppenstall and Evans discloses all of the above elements in claim 1, but does not disclose a gas turbine having a high-pressure compressor with a rotor and rotor blades made of stainless Cr-Ni steel.

However, Siga et al. teaches of a having a gas turbine having a high-pressure compressor with a rotor and rotor blades made of stainless Cr-Ni steel (col. 7 lines 7-13 and abstract) for the purpose of resisting creep rupture (col. 1 lines 61).

Since Rossman, Evans, Heppenstall and Siga et al. are all from thermal turbomachine art, the purpose disclosed by Siga et al. would have been recognized in the pertinent art of Rossman. It would have been obvious to one having ordinary skill in the art to make the rotor and blades of stainless Cr-Ni steel for the purpose of resisting creep rupture (col. 1 lines 61).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Devin Hanan
Patent Examiner
Art Unit 3745



EDWARD K. LOOK
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9/6/05